

decide upon their constitutional character. At least, the case above related *apparently* contradicts the inference by Bateman and Rayer. May not, however, the tubercular disease itself have produced within the system the peculiar diathesis of encephaloid disease? Or did it excite into action a medullary diathesis, which pre-existed at the period of the tubercular development? Or rather, may it not have been a mere external symptom of such a constitutional taint? The consecutive and simultaneous appearance of the cutaneous and subcutaneous tumours, their continual increase up to the period of the supervention of the internal growth, and their manifest disappearance, the cutaneous particularly, as this medullary mass became larger, would indicate a very singular coincidence, or at least, a certain relationship between the three different species of tumour—if not evidence of a single constitutional cause.

I might here observe, in conclusion, how easily might this abdominal tumour, in its advanced stage, have been mistaken for an enlarged ovarium! And how fatal the attempt at extirpation! Its elasticity, its relation to the pelvis, its location in the left groin, its connection with menstrual derangement, and its resistance to remedial treatment, would have led to such a diagnosis. Among the cases of error on record, some, I have no doubt, were even less characteristic of ovarian disease.

LANCASTER, PENN., Nov. 1843.

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ART. III.—*On the Pulse of the Insane.* By PLINY EARLE, M. D.

THOSE familiarly acquainted with the writings of authors upon mental alienation, cannot fail to have observed the brevity of their remarks upon the peculiarities of the pulse attendant upon this disease, and not unfrequently the absence of any direct allusion whatever to the subject. This evasion, if evasion it be, appears the more glaring from the undeniable facts, first, that in a large majority of patients labouring under an attack of mental disorder, the circulatory system, involved in the disease, presents phenomena of a pathological character, and, second, that for a long period antecedent to the last few years, insanity was, in several of its forms, almost universally treated by the abstraction of blood, either generally, locally, or by both of these methods at once. The evasion can be satisfactorily explained only by the fact that, in insanity, the condition of the pulse is a less certain index of the true nature of the disease, of its mildness or intensity, than it is in other affections, and therefore is of but comparatively little importance in facilitating a prognosis, or in indicating the most judicious therapeutical treatment. But to this general truth there are many exceptions, of which the following is one: “whenever it (the pulse) exhibits very considerable

changes, without any obvious causes or corresponding symptoms, sudden death frequently closes the scene.”\* Were it not for these exceptions, attention directed to the pulse would be but time and labour lost; but their existence renders the investigation of the subject a matter of no trifling importance.

The special subject of discussion, in the present paper, is the *rapidity* of the pulse in insanity; but the occasion will be taken briefly to notice some other phenomena which, in the same disease, are more or less frequently apparent in this index of the circulation.

In phrenitis accompanied by maniacal hallucination or delirium, the pulse is frequently contracted, small and apparently feeble. Under these circumstances it almost invariably becomes fuller and stronger after the abstraction of blood from the arm. Dr. Spurzheim barely alludes to this condition, when speaking of the treatment of cases in which there is a hypersthenic state of the brain.† In patients of a nervous temperament, and especially those whose disease is characterized by great irritability, as if the nervous system were more deeply implicated in the disease than the brain itself, the pulse may be not only unnaturally frequent but anormally developed, full and hard. Yet, were the physician to adopt this as his guide, direct his treatment accordingly, and resort to depletion by venesection, he would, in most cases, only aggravate the disease, increasing the symptoms which it was his intention to mitigate. Chalybeate or martial preparations, aromatic tonics, frictions, and the shower-bath are more appropriate remedies than the lancet.

“With patients labouring under mental affections, whether of the melancholic or maniacal description, it is a peculiarity worthy of attention, which sometimes prevails, that the pulse differs in the radial and carotid arteries, and, when soft and weak in the former, is full and hard in the latter, though the number of pulsations in a minute be the same in both.”‡ I have observed this peculiarity in a few cases, but in my experience it has not been so frequent as I had previously been induced to believe was the case among the insane. In cases where it is observed, there is generally an anormal determination of blood to the brain, with flushing of the face, preternatural heat of the head and coldness of the extremities. Van Swieten, when treating of “raving mania,” appears indirectly to allude to this state of the pulse, although his remark is more general, and he mentions but one of the involved conditions. “This species of mania,” says he, “is easily distinguished from the rest by the signs of a plethora present, such as great heat, more especially in the head, a redness of the face and eyes,

\* Practical Observations on Insanity. By Joseph Mason Cox, M. D.

† Vide, Observations on the Deranged Manifestations of the Mind, or Insanity. By J. G. Spurzheim, M. D.

‡ Dr. J. M. Cox. Op. Cit.

*a violent throbbing of the carotid and temporal arteries.*”\* Marshall, also, speaks of this phenomenon of the pulse, as follows: “The pulse, though it may not be frequent, may not be healthy in its mode of action; or, if healthy at the wrist, may not be so in the head.”†

Insanity frequently arises from, or is co-existent with, organic lesion of the heart or its appendages. In these cases, the pulse exhibits the peculiarities by which it is characterized in ordinary cases of those lesions, somewhat modified, perhaps, by the mental disturbance. Thus it may be small, corded, wiry; or full, hard, fluctuating and intermittent.

“The pulse in some maniacs is affected by the most trifling causes; in others it suffers little variation, however violent the attendant symptoms. I have often suspected that some maniacs possess the faculty, like Spallanzani, of regulating the action of the heart by the power of volition, increasing or diminishing it by means of the exciting or depressing passions.”‡ Two years since a patient came under my observation to whom the first remark in the above quotation was particularly applicable. His temperament was a combination of the sanguine and nervous, the latter being greatly predominant. He had been many years insane; his general health was perfectly good, and he was under no curative treatment. The general range of his pulse was from 80 to 90 beats per minute; but the slightest causes, such, for example, as being unexpectedly asked to allow his pulse to be felt, which in others would occasion but little or no agitation, would immediately increase the pulsations to 120 or 130 in the minute. I have also met with one lunatic who appeared to possess, to some extent, a voluntary control over the circulation; and in the course of investigations upon the rapidity of the pulse, the results of which were published in a former number of this journal, one of the *sane* men subjected to observation had the power of increasing the number of pulsations, 10 or 15 per minute, by clenching his hand and beating his elbow a few times against the wall.

“If the pulse continue perfectly natural it is an unfavourable symptom, more so than if unnaturally slow; as, in the latter case, we may reasonably suspect some unequal pressure on the brain, not wholly out of the reach of remedies.”§ It is not very rare in chronic insanity, for the pulse to present no apparent deviation from the normal state, but in the acute forms of the disease, to which the above remarks have particular reference, it is of much less frequent occurrence. A lady of my acquaintance has been deranged several years. Her disease, which has the general type of melancholia, has been the most variable of any case that has ever come within my observation. It presents itself in almost as great a diversity of forms as the

\* Van Swieten's Commentaries upon Boërhaave's Aphorisms, vol. ii. p. 35.

† Morbid Anatomy of the Brain in Mania and Hydrophobia. By Andrew Marshall, M. D.

‡ Dr. J. M. Cox. Op. Cit.

§ Ibid.

ever-changing figures of a phantasmagoria; and the attendant physical symptoms, no less Proteus-like, have constantly varied, almost from day to day. Yet, throughout the whole, whether the mental manifestations bore the character of exaltation or depression, whether the circulation were equable or strongly directed to the head, whatever the condition either corporeal or mental, the pulse has deviated but slightly from its accustomed velocity. In cases of paroxysmal mania, how severe soever may be the accessions of the disease, it will frequently be found, particularly in patients advanced in life, that during the intermissions the pulse resumes its healthy mode of action. It is suggested by Andrew Marshall that, in some instances, the pulse may become accustomed to the cause of irritation and hence return to its natural condition.

A case of insanity in which the loss of a small quantity of blood was immediately followed by remarkable changes, both physiological and psychological, came under my observation two or three years since. The patient, a man about forty years of age, was of small stature, of bilious temperament with tissues firm and compact. His disease bore the character of religious exaltation, and though he was ordinarily sufficiently calm and quiet to require no particular restraint, yet at times he became excited, noisy, obstinate, and dictatorial. This last-mentioned condition was accompanied by increased activity of the circulation. Upon the abstraction of ten, or even of six ounces of blood from the arm, the pulse would instantly fall from 120 to 60 or 70 beats in the minute, and his haughty, overbearing and despotic feelings and action, be exchanged for those of kindness, humility and supplication.

Since the publication of my observations upon the rapidity of the pulse, my attention has been directed, by my friend Dr. Dunglison, to a case related by Dr. Rush, in which that subject had an important bearing in medical jurisprudence. In one of his lectures, after having detailed the customary methods of detecting insanity in cases of doubt, Dr. Rush proceeds as follows: "Should all the above marks fail of deciding the state of the mind as to sanity, recourse should be had to the state of the pulse. It is, with but few exceptions, more frequent, in all grades of madness than in health. This remark I know is contrary to the histories of the disease that are to be met with in authors: all of whom consider the absence of fever as the characteristic difference between madness and delirium. Should any one doubt of the truth of this remark, I beg leave to refer him to the Pennsylvania Hospital, in which there are at present between 60 and 70 maniacs; in all of whom, except eight, the pulse is more frequent than in its natural state. The knowledge of this fact has once been applied, with success, in the administration of the criminal law of the United States. One of the two men who were condemned to die, for treason committed against the general government, in the western counties of Pennsylvania, in the year 1794, was said to have lost his reason after sentence of death had been pronounced upon him. A physician was consulted upon his case, who declared his

madness to be feigned. General Washington, then President of the United States, directed a consultation of physicians upon his case, and Dr. Shippen, Dr. Samuel P. Griffiths and myself were appointed for that purpose. The man spoke coherently upon several subjects and for a while the state of his mind appeared doubtful. I suggested the propriety of examining his pulse. It was more frequent, by 20 strokes in a minute, than in the healthy state of the body and mind. Dr. Shippen ascribed this to fear. I then requested that the pulse of his companion in guilt and fear might be felt. It was perfectly natural in frequency and force. This discovery induced us to unite in a certificate that the man who was only supposed to be mad, was really so; in consequence of which his execution, as well as that of his companion, was suspended for two months; in which time the popular clamor for their lives so far subsided, that they were both pardoned by the executive of the United States.”\*

Dr. Beck alludes to this case in the following terms: “Dr. Rush proposes a rule (for detecting insanity) grounded on the following circumstance: the pulse, according to his observation, is more frequent in all the grades of madness than in health. I have already intimated doubts on this point, and therefore can only recommend it as a test worthy of notice, but not of great value.”†

If, then, as in the case in question, the condition of the pulse be a decisive though the ultimate test of insanity or its opposite; if a resort to the state of the circulation be the *experimentum crucis* in a determination of the proposition whether a man be or be not labouring under mental alienation; if the decisions of the tribunals of justice are to be governed, in capital offences, by the number of pulsations per minute which may be observed in the wrist of the prisoner; it is of the highest importance that accurate ideas upon the subject should be entertained by those concerned. “Our books sometimes deceive us,” say Leuret and Mitivić, “but the book of nature always reveals the truth.” In rejecting, as he intimates that he does, the authority of writers, and resorting for accurate knowledge to the patients under his care, Dr. Rush acted in accordance with the precept inculcated in the foregoing maxim, as well as with the following of Dr. Ph. Pinel, “A wise man is cautious how he becomes the echo of a commonly received opinion.”‡ But since the authority of several persons has, as it ought to have, greater influence than that of one; since the results of the observations made by an individual acquire far greater force if corroborated by the testimony of others; it is proposed to examine the truth of the opinion upon which the decision of Dr. Rush and his colleagues was founded, by adducing and comparing the evidence of authors who have written upon the subject. In “melancholy madness,” says Van Swieten, “the pulse

\* Sixteen Introductory Lectures to Courses of Lectures upon the Institutes and Practice of Medicine, &c. By Benjamin Rush, M. D. Lect. xvi. p. 369.

† Elements of Medical Jurisprudence, by T. R. Beck, M. D., vol. i. p. 352-3.

‡ A Treatise on Insanity, &c. By Ph. Pinel.

beats slower and the body feels colder.”\* This reduction in the number of pulsations is attributed to the “atribiliary humour.” The same author quotes from the description of the same disease by Aretæus, who says “the pulses are in this case generally apt to beat small, slow, weak, hard and cold.”† Esquirol, in reference to the same type of disease, or to what he calls “Lypémania,” says, “the pulse is ordinarily slow, feeble, concentrated; sometimes it is very hard, and a kind of frémissement of the artery is felt under the finger.”‡ In regard to other forms of the disease, although Van Swieten does not definitely assert the greater rapidity of the pulse than in a state of health, yet this may be reasonably inferred from his remarks quoted in a foregoing part of this article (p. 307). Cullen also indirectly asserts a preternatural rapidity of the pulse, when speaking of the treatment of mania. “In those instances,” says he, “in which there is any frequency or fulness of the pulse, or any marks of an increased impetus of the blood in the vessels of the head, bloodletting is a proper and even a necessary remedy.”§ Esquirol says nothing more definite upon this point than that which is contained in the following extract. “Among the insane, some are plethoric, others lymphatic, some strong, others feeble; in the former the pulse is full, hard and developed, in the latter, slow, soft and concentrated.”|| It is not a little remarkable, that this author, generally so minute in his details upon subjects connected with mental diseases, should have restricted his remarks upon the pulse to those brief and general observations contained in the extracts here transcribed. Willis alludes to the rapidity of the pulse, in insanity, in the same indirect manner that has been noticed in some other authors. “The pulse will not fall,” says he, “from 130 to 70 as rapidly as in other complaints; it may continue about 100 for some weeks without causing any alarm, provided the patient be supported.”¶

The foregoing extracts from the several authorities are made, not because they have so definite and decisive a bearing upon the subject as might be desired, but because they are the most so to be met with in the standard writers. Many of the best authors upon mental affections are as silent upon the subject of the pulse as if the circulatory system were never implicated in diseases of the kind.

It is evident that the question of the relative rapidity of the pulse of the sane and the insane is susceptible, to a greater extent than most other propositions in physiology or pathology, of demonstration by the Baconian sys-

\* Commentaries, vol. 11th, p. 12.

† Lib. 1. De Causis et Signis Morborum. Cap. 5. p. 30.

‡ Des Maladies Mentales. Vol. i. p. 412.

§ First Lines of the Practice of Physic. By William Cullen, M. D., vol. 3. p. 200.

|| Op. Cit. vol. 1. p. 18.

¶ A Treatise on Mental Derangement, containing the substance of the Gulstonian Lectures for May, 1822: By Francis Willis, M. D.

tem of induction. Positive truth can here be attained only by direct observation, and by the numerical aggregation of the results of that observation. The only investigations upon this subject which have been made in this country, or at least, the only ones which have been published, are those of Dr. Brigham and myself. In Paris, Drs. Leuret and Mitivié made a series of observations of a similar kind about ten years since, and as they were made with great care, and with reference to various influences which might affect the results, they possess an interest which justifies an exposition of them in this place.\*

About one hundred incurable insane women were selected, whose general health was good and who were under no remedial treatment. Their ages, constitution, temperament, and condition in regard to menstruation were noted. They were placed in separate dormitories, to prevent any general excitement from those whose disease rendered them violent. They were requested to remain in bed, each morning, until after the examination should have been made; a request with which a few, from the nature of their disease, did not generally comply. They were visited regularly, and their pulses felt every morning for several days previous to the commencement of regular observations, in order to accustom them to the practice and thereby prevent an augmentation of the pulse, by agitation. The observations commenced on the 28th of August, and continued through a period of twenty-eight days, to the 24th of September, 1831. During this time several of the patients left the wards, so that but eighty-nine had been examined throughout the whole course of observation. Of these 89, the whole number of pulsations in a minute, for 28 days, was 206,436. During the first fourteen days it was 105,878, and during the last fourteen, 100,558, making a difference of 5,320. The greatest number of a single observation was 7,863, or an average of 88 and 3-10ths to each patient; and the least, 6,910, or an average of 77 and 6-10ths. The difference between these two observations is 953. The least difference between any two observations was but 4 pulsations; that of those on the 16th and 17th of September. The general total, reckoned by days, gives the mean number of pulsations, daily, 82 and 9-10ths. The mean number was smaller than this on 15, and larger on 13 days. Of the 13 on which it was larger, 12 were during the first half of the period of observation, and but one during the last half. On the first day of observation the pulse of 57 patients was higher than the general average (82.9) above stated. The number decreased daily until, on the last, there were but 17 in whom it was higher than this average. This gradual diminution of the number of pulsations is attributed to the diminished temperature consequent upon the approach of autumn.

The highest average number of the pulse in any patient was 120 per

\* The work in which these observations were published is entitled "*De la fréquence du pouls chez les aliénés.*" Par F. Leuret and F. Mitivié." Paris, 1832.

minute. This occurred in a woman about 30 years of age. In regard to the correspondence between the changes of temperature and the variations of the pulse, the following are the results of the observations. On *ten* days an elevation of temperature was accompanied by an augmented average in the frequency of the pulse; on *eight* days a depression of temperature coincided with a diminution of that average; on *six* days there was increase of temperature and lessening of the average frequency of the pulse; on *three* days the temperature was lowered and the average of the pulses raised, and on *one* day the temperature was elevated while the average of pulsations remained unchanged.

The number of patients the average of whose pulse was within each decade, from fifty upwards, is given below. For the purpose of condensation and comparison, the cases of Dr. Brigham and myself are incorporated into the same table.

| Pulsations.               | Leuret's cases. | Brigham's cases. | Earle's cases. | Total. |
|---------------------------|-----------------|------------------|----------------|--------|
| From 50 to 60 per minute, | 1               |                  |                | 1      |
| " 60 " 70 "               | 4               | 8                | 1              | 13     |
| " 70 " 80 "               | 29              | 45               | 8              | 82     |
| " 80 " 90 "               | 38              | 53               | 20             | 111    |
| " 90 " 100 "              | 10              | 44               | 10             | 64     |
| " 100 " 110 "             | 7               | 12               | 10             | 29     |
| " 110 " 120 "             |                 | 14               | 3              | 17     |
| Total.                    | 89              | 176              | 52             | 317    |

Leuret includes all his cases which were over 100, in the decade from 100 to 110: some were evidently higher, since, as above remarked, the average of one patient was 120.

Leuret and Mitivié's cases were all of females, while those of the other two observers were of both males and females. It will be perceived by an inspection of the table, that there is a remarkable coincidence in the results of the three. The greatest number of patients whose pulse ranged in any decade, is that of those from 80 to 90. Of the whole number, there were more whose pulse was upwards of 90 than in whom it was below 80. There were 110 of the former, and but 96 of the latter. For the purpose of more easily instituting a comparison between the insane and the sane in regard to the subject in question, the observations on the latter are here introduced.

Dr. Brigham says, when speaking of his own observations, in the Eighteenth Report of the Retreat at Hartford: "In *forty* sane individuals, labourers, in good health and at rest, the pulse was found to range from 70 to 80 beats in the minute, which may be considered the natural healthy state." The observations reported by Leuret and Mitivié and embodied in the subjoined table, were made upon one hundred and ten young men, students at the Veterinary school at Alfort, near Paris; their ages varying from 17 to 27, the average being twenty-one years.

| Cases.                                                           | 46 to 49 per minute | 50 to 60 | 60 to 70 | 70 to 80 | 80 to 90 |
|------------------------------------------------------------------|---------------------|----------|----------|----------|----------|
| Leuret and Mitivié's, in bed,<br>Earle's, up but not exercising, | 4                   | 27<br>1  | 37<br>8  | 35<br>1  | 7        |

The results exhibited by this table are very different from those of the former. The greatest number is in the decade from 60 to 70, instead of in that from 80 to 90, as was the case in the other. Of the 120 persons represented in it, 81, or more than two-thirds, are placed between 60 and 80. Below 60 there are 32; above 80, only 7.

The difference between the pulse of the insane and the sane may be shown in another way, as follows. The average number of pulsations per minute of Leuret and Mitivié's cases was, insane  $82\frac{9}{16}$ , sane 65. Of Earle's cases, acute insane, males 94.41; females 89.15. Chronic insane, males 89.62, females 87.27. Sane, males 64.69.

Let us now return to the special consideration of the cases of Leuret and Mitivié. It became a question with those observers whether the pulse varied according to the type of the disease, and classifying their patients in reference to this, the result was as follows:

| Type of Disease.                                | 50 to 60 per minute | 60 to 70 | 70 to 80 | 80 to 90 | 90 to 100 | over 100 |
|-------------------------------------------------|---------------------|----------|----------|----------|-----------|----------|
| 12 "Hallucineés," with or without complication, | 1                   |          | 6        | 7        | 2         | 3        |
| 17 Maniacs,                                     |                     |          |          | 5        | 2         | 3        |
| 3 Monomaniacs,                                  |                     |          |          | 3        |           |          |
| 56 Demented, with hallucinations.               | 1                   | 6        | 22       | 23       | 4         |          |

Hence the pulse was most rapid in what our authors term "hallucineés;" the least so in the demented, while maniacs and monomaniacs occupy an intermediate position. The same relative rapidity in the several types of disease was found in 80 cases subjected to investigation in the ensuing winter. To be fully satisfied on the subject, a third series of observations was made in May, 1832, upon 137 insane women, and terminated in the same results as those before mentioned, as will be seen in the annexed table.

| No. | Type of Disease. | Age. Years. | Mean Age. | Pulse per minute. | Mean No. of pulse. |
|-----|------------------|-------------|-----------|-------------------|--------------------|
| 50  | "Hallucineés,"   | 26 to 60    | 50        | 74 to 132         | 95                 |
| 23  | Maniacs,         | 25 to 69    | 47        | 67 to 123         | 90                 |
| 34  | Monomaniacs,     | 25 to 66    | 44        | 66 to 124         | 84                 |
| 30  | Demented,        | 24 to 69    | 49        | 54 to 107         | 76                 |

Sixteen of the 89 women in the first series menstruated during the period of observation. In 8 the mental condition and the state of the pulse remained unaffected; in 6, there was increased general agitation and an augmented pulse as the menstruating period approached, but both subsided during the catamenial flow; in one there was accelerated pulse without

subsidence during the flow, and in one the pulse was less rapid during the period of menstruation than at other times.

A singular case of alternation of the pulse between rapidity and slowness, is mentioned. It occurred in a demented patient who "every second day ate, talked and walked; and her pulse, even in the morning, was more rapid than on the previous day. The next day she sat still, said nothing and ate nothing, and her pulse was slower. There were four consecutive days at one time, of frequent pulse. The patient ate and walked during the four days." The following is a statement of her pulse, twenty-two days in succession, viz. 74, 77, 72, 84, 72, 92, 64, 100, 68, 95, 82, 100, 68, 84, 71, 75, 65, 96, 85, 87, 87, 79. Such are the most important results of the series of observations in question. As has before been hinted at, these observations were followed by others. Eighty women, of similar condition to the aforementioned, were subjected to daily examination, from the 17th of January to the 13th of February, 1832. The total number of pulsations was 176,120; the greatest difference between two daily observations was 428, the least difference, 2: the average daily pulsation per minute, for the whole, 78 and a fraction.

The influence of temperature was as follows:—

|                                                     |   |   |      |   |    |   |
|-----------------------------------------------------|---|---|------|---|----|---|
| Rise of temperature and rise of pulsations 4 times, |   |   |      |   |    |   |
| Fall                                                | " | " | fall | " | 7  | " |
| Rise                                                | " | " | fall | " | 7  | " |
| Fall                                                | " | " | rise | " | 10 | " |

The diminished average, as above stated, upon the former observations is attributed to the temperature of winter. The difference is 4 pulsations per minute. The pulse of the aged was more affected than that of the young.

Some conclusions or inferences of importance, not stated above, but contained in the exposition of Leuret and Mitivić, are included in the following *résumé*.

1. "The average number of pulsations in winter was 78 and a fraction; in summer 82 and a fraction."

2. "The difference between the number of pulsations from day to day, was much less in winter than in summer; the same is true of the number of patients whose pulse was higher than the mean or average number."

3. "The temperature of winter diminished the frequency of the pulse; but its variations did not produce an augmentation or diminution of frequency, as was the case in summer."

4. "Six insane women were in the tables of both seasons. Of 40 the pulse was less frequent in winter than summer; of the other 20, it was more frequent. The diminution of rapidity was in 24 aged and 17 young women."

5. "The greatest rapidity of pulse was in the young women, but the greatest number in whom it was very frequent was among the aged."

6. "The moon had no manifest action on the rapidity of the pulse either

in summer or winter. The same may be said of the weight of the air and its hygrometric state."

7. "The electricity of the air being insusceptible to exact mensuration, its changes cannot be compared with the variations of the pulse."

8. "The differences in the number of pulsations, per minute, was very great, varying from 40 to 150 or more. In the same patient the difference from day to day was five or six pulsations, and sometimes more."

9. "In four or five patients the rapidity of the pulse appeared to have a quartan type; in one it had a strongly marked tertian type. The day of greatest frequency of the pulse was that on which the patient appeared the nearest well."

10. "The rapidity of the pulse is not the same for all kinds of insanity. According to our observations, the hallucinéés hold the first rank; the maniacs come next, then the monomaniacs, and lastly the demented. There were more feeble than robust patients whose pulse was rapid."

11. "Of the women whose age did not exceed 46 years, a few menstruated during the time they were under observation. Of these, in the summer, 6 in 16 had the pulse frequent before and during the flow, and in winter, 6 in 15."

In the work of Leuret and Mitivié are reported the observations made during one week, from the 6th to the 13th of February, 1832, at the Maison de Santé at Ivry, near Paris, upon the pulse of 10 men and 7 women insane, and 12 men and 6 women in bodily and mental health. The observations were made twice every day, at morning and evening, and the results, or average number of pulsations per minute for the whole time, in the several classes of persons, are as follows.

|                      | MEN.    |       | WOMEN.  |       |
|----------------------|---------|-------|---------|-------|
|                      | Insane. | Sane. | Insane. | Sane. |
| Morning observation, | 75      | 68    | 75.03   | 81.08 |
| Evening, do.         | 75      | 66    | 79.28   | 75.15 |

In men the pulse of the insane averaged 13 beats per minute higher than that of the sane in the morning observations, and 9 beats higher in the evening observations. In women, the average in the morning was 6 beats per minute higher in the sane than the insane, and in the evening 4 higher in the insane than in the sane. Hence these observations, with the exception of those on the women in the morning, give additional proof of the greater rapidity of the pulse in lunatics than in those who are free from mental disorder. It is probable that, in this last exception, the sane women subjected to observation were under bodily exercise, at the times of the inspection of the pulse.

We are now prepared for the question, "Are the observations herein adduced sufficiently extensive to justify the conclusion that, in general, the pulse of lunatics is more rapid than that of the sane?" For ourselves, the results at the several places of observation have been so nearly coincident, and they exhibit so great a predominance in regard to the phenomenon in

question, in the insane who were subjected to inspection, that, although the number of persons observed is less than we might have wished, we unhesitatingly answer the question in the affirmative. It is to be hoped, however, that the physicians of some of our large public institutions may institute observations, and prosecute the subject to a more strongly fortified demonstration.

Supposing, then, the question to be proved beyond the shadow of a doubt, how far is it justifiable to place reliance upon the fact in prosecuting an inquiry into the mental condition of an individual? We must recollect that, although the fact be proved, yet that fact, or its corresponding rule, is but a general one, to which, when applied to individuals, there are many exceptions. Hence our confidence in it as a test of mental disease will be materially shaken. And when it is recollected that the circulation differs greatly in different persons, even in health, and that there is a vast diversity of influences which, in health or disease, may determine the acceleration or diminution of its rapidity, we shall find that but little value can be placed upon it as a test in the case in question. Where life may be saved or prolonged by the decision, humanity and philanthropy will appeal for all the weight which the demonstrated truth can yield; but if condemnation and consequent death await the result which this truth may determine, the benevolent physician will be cautious in giving it any consideration that is not supported by tests of a more certain, a less variable and a less fluctuating character.

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ART. IV.—*Statistics and Cases of Midwifery; compiled from the Records of the Philadelphia Hospital, Blockley.* By GEO. N. BURWELL, M. D., Resident Physician.

THE following statistics and cases are drawn up from the records of the obstetrical wards of the Philadelphia Hospital, Blockley. They comprise the cases of labour which occurred from October 1835 to January 1844 inclusive, a period of eight and a half years.

The wards are under the immediate care of the resident physicians of the hospital, who are generally young men, just graduated, and who very rarely serve more than one year. They attend the cases in rotation and record them. There are also two obstetricians attached to the wards, upon whom the residents call for advice and assistance in cases of difficulty. At no other time do they make a *practice* of visiting the wards.

I have no doubt of the entire correctness of the records as far as they go. Their great fault is a want of completeness; for instance, there has not been